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PSYCHOLOGICAL RESILIENCE AS A KEY FACTOR OF SPORTING SUCCESS

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Key words: *psychological resilience, sporting success, cognitive reappraisal, emotional regulation, behavioral strategies, heart rate variability, HRV biofeedback, mindfulness, elite sport.*

The article is devoted to the analysis of psychological resilience as a key factor of sporting success. Purpose of the study – to analyze the role of psychological resilience as a key factor of sporting success and to substantiate approaches to its development within the system of athletes' preparation. Object of the study – the process of psychological support in sports activity. Subject of the study – athletes' psychological resilience as an integrative characteristic that determines the effectiveness of their performance in competitive and training conditions. This phenomenon is considered as an integrative characteristic combining cognitive, emotional, and behavioral components that ensure the effectiveness of athletes' activity under conditions of high stress and competition. The role of cognitive reappraisal of competitive situations in terms of a "challenge" rather than a "threat" is substantiated, as it enhances performance and concentration. The significance of emotional regulation for maintaining the optimal zone of functioning and preventing emotional burnout is highlighted. The behavioral component of resilience is shown to determine the athlete's ability to maintain activity, persistence, and self-control even under critical circumstances. A synthesis of current studies reveals the relationship between psychological resilience and psychophysiological markers, in particular heart rate variability, which opens the possibility of applying biofeedback in sports training practice. The practical significance of the study lies in systematizing approaches to resilience development, including psychological skills training, mindfulness practices, breathing techniques, and pressure-based scenario training. Prospects for further research are associated with the standardization of resilience measurement methods and the development of targeted programs for athletes of different sports and age groups.

ПСИХОЛОГІЧНА СТІЙКІСТЬ ЯК КЛЮЧОВИЙ ЧИННИК СПОРТИВНОЇ УСПІШНОСТІ

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Ключові слова:

*психологічна стійкість,
спортивна успішність,
когнітивна переоцінка,
емоційна регуляція,
поведінкові стратегії,
варіабельність серцевого
ритму, HRV-біофідбек,
майндфулнес, спорт
високих досягнень.*

Статтю присвячено аналізу психологічної стійкості як ключового чинника спортивної успішності. Мета дослідження – проаналізувати роль психологічної стійкості як ключового чинника спортивної успішності й обґрунтувати підходи до її розвитку в системі підготовки спортсменів. Об'єкт дослідження – процес психологічного забезпечення спортивної діяльності. Предмет дослідження – психологічна стійкість спортсменів як інтегративна характеристика, що визначає ефективність їхньої діяльності у змагальних і тренувальних умовах. Розкрито сутність цього феномену як інтегративної характеристики, що поєднує когнітивні, емоційні та поведінкові компоненти, які забезпечують ефективність діяльності спортсмена в умовах високого стресу та конкуренції. Обґрунтовано роль когнітивної переоцінки змагальних ситуацій у форматі «виклику» замість «загрози», що сприяє підвищенню продуктивності та концентрації. Висвітлено значення емоційної регуляції для підтримання оптимальної зони функціонування та профілактики емоційного вигорання. Показано, що поведінковий компонент стійкості визначає здатність спортсмена зберігати активність, наполегливість і самоконтроль навіть у критичних обставинах. Узагальнення сучасних досліджень засвідчує взаємозв'язок психологічної стійкості з психофізіологічними маркерами, зокрема варіабельністю серцевого ритму, що дає змогу застосовувати біологічний зворотний зв'язок у практиці спортивної підготовки. Практична значущість роботи полягає у систематизації підходів до розвитку стійкості, які охоплюють психологічний тренінг, майндфулнес-практики, дихальні техніки та тренування під тиском. Перспективи подальших досліджень пов'язані зі стандартизацією методик вимірювання стійкості та розробкою цільових програм для спортсменів різних видів спорту й вікових категорій.

Introduction. Psychological resilience is one of the key factors determining athletes' success in modern sport. In a highly competitive environment, where the margin between victory and defeat is measured not only by physical preparation but also by the ability to perform effectively under stress, psychological resilience gains strategic importance. It reflects an athlete's capacity to adapt to external and internal challenges, maintain an optimal level of performance, preserve concentration, regulate emotions, and sustain motivation even under adverse circumstances.

In the scientific literature, psychological resilience is viewed as a complex integrative characteristic of personality that combines cognitive, emotional, and behavioral components. Its development is determined by the interaction of individual-

typological features, social environment, competitive experience, and targeted psychological training. The practice of elite sport demonstrates that athletes with high levels of resilience are able to recover more quickly after defeats, better regulate anxiety, and more effectively realize their potential in critical moments of competition.

The relevance of the study is driven by the growing focus on the psychological aspects of sports activity, the integration of psychological training methods into preparation structures, and the need to cultivate self-regulation skills in athletes that ensure long-term maintenance of performance and the prevention of emotional burnout.

Purpose of the study – to analyze the role of psychological resilience as a key factor of sporting

success and to substantiate approaches to its development within the system of athletes' preparation.

Object of the study – the process of psychological support in sports activity.

Subject of the study – athletes' psychological resilience as an integrative characteristic that determines the effectiveness of their performance in competitive and training conditions.

Analysis of contemporary literature sources. Current reviews and empirical studies confirm that athletes' psychological resilience is an integrative characteristic that emerges in response to the specific stressors of competitive activity and is associated with the optimal realization of potential at peak events. The mechanisms of resilience include cognitive appraisal of demands and resources, effective emotional regulation, and sustained motivational engagement, as demonstrated in grounded theory and qualitative studies of elite Olympians.

It is important to distinguish between *psychological resilience* and *mental toughness*. The latter is often described as a set of traits associated with success; however, its construct status and measurement validity remain under debate. At the same time, reviews indicate a link between higher levels of "toughness" and performance outcomes, although significant methodological limitations exist (sample selection, heterogeneity of instruments). Additionally, it is emphasized that "toughness" does not contradict mental health and may serve either as an indicator or as a prerequisite for it.

A key link connecting resilience with performance is the cognitive reappraisal of a competitive situation in terms of a "challenge" rather than a "threat." The challenge/threat state theory describes the pathways through which appraisal influences decision-making, attention, physiological activation, and motor control; broadly, a challenge state is associated with better performance, whereas a threat state is linked with greater variability and errors. Critical reviews also highlight existing gaps: heterogeneity in induction protocols and measurement indicators (behavioral, cardiovascular), which calls for greater methodological consistency.

Psychophysiological markers of self-regulation occupy a prominent place in modern sport psychology. Frequency and time-domain indices of heart rate variability (HRV) are used to monitor autonomic regulation, fatigue, and adaptation to training loads in team sports; systematic reviews emphasize the promise of HRV as a non-invasive indicator of athletes' states. Meta-analytic evidence shows that HRV biofeedback improves emotional regulation and a range of functional outcomes, which is highly relevant for preparing athletes to cope with competitive stress.

Intervention approaches have evolved from classical psychological skills training to contextual

models oriented toward acceptance, mindfulness, and value-driven goal-directed behavior. The Mindfulness-Acceptance-Commitment (MAC) approach integrates mindfulness practices and acceptance processes with behavioral self-regulation strategies, providing an example of a technology that simultaneously influences attention, emotions, and motor task execution under challenging conditions.

The quality of evidence is improving due to multimethod designs (combining questionnaires, psychophysiology, behavioral metrics, and game statistics), yet challenges remain: heterogeneity in the operationalization of "resilience/mental toughness," inconsistency in defining "training effects," and limited control over confounding variables (seasonal phase, injury status, individual differences). Several reviews call for the standardization of assessment and stress-induction protocols and for a deeper analysis of mediating mechanisms (attention, rumination, self-compassion, interpersonal support) in order to move from correlational associations to causal inferences.

Practical implications for training. Systems aimed at developing psychological resilience typically combine: training in cognitive reappraisal and "challenge"-oriented interpretation of competitive stress; attention and emotional regulation skills (including mindfulness, breathing protocols, HRV biofeedback); pressure-training scenarios with progressive increases in difficulty; team-based practices of support and leadership embedded into everyday training routines.

Such multilevel programs are aligned with evidence-based models of challenge/threat appraisal, psychophysiological self-regulation, and acceptance-oriented approaches.

The literature converges on the idea that psychological resilience is a process-oriented characteristic rooted in the appraisal of demands and resources, manifested through adaptive regulation of attention, emotions, and physiological systems. It enhances the likelihood of stable competitive performance and rapid recovery after setbacks – provided that training and educational programs deliberately cultivate the key mechanisms of self-regulation and social support.

Research Results. The analysis of empirical and theoretical sources confirmed that psychological resilience is a key factor determining the stability and effectiveness of sports performance under conditions of high competition and stress. The synthesized results indicate that athletes with high levels of resilience: better control anxiety in competitive situations; are able to maintain concentration even under substantial informational and emotional load; recover working capacity more quickly after failures and defeats; and mobilize internal resources more effectively in critical moments of competition.

Studies have shown that psychological resilience is a multicomponent construct that includes:

Cognitive component – the ability to reappraise a stressful situation in terms of a “*challenge*” rather than a “*threat*,” which positively influences performance. The cognitive component of resilience reflects the athlete’s ability to reinterpret stress and perceive it as a challenge rather than a threat. This process is based on the mechanisms of cognitive appraisal described in R. Lazarus’s transactional theory of stress, where the interpretation of an event determines the nature of emotional and behavioral responses.

A *challenge state* implies that the athlete evaluates their resources (physical, technical, psychological) as sufficient to overcome the demands. In this state, constructive motivation is activated, focus is enhanced, and physiological responses are optimal (moderate increase in heart rate, efficient perfusion of brain and muscles, balance of sympathetic and parasympathetic regulation).

A *threat state* arises when the athlete perceives situational demands as excessive and resources as insufficient. This leads to heightened anxiety, muscular tension, impaired attention and coordination, all of which negatively affect performance.

Research in sport (Meijen et al., 2020; Blascovich & Mendes, 2000) confirms that a challenge state is associated with higher athletic performance, while a threat state is linked to more errors, poorer concentration, and reduced utilization of motor potential. Cognitive reappraisal (“this moment is an opportunity to show my best, not a risk of failure”) thus becomes a critical mechanism of psychological self-regulation that directly influences the effectiveness of technical and tactical execution.

From a pedagogical perspective, the development of this component ensures the formation of an adaptive thinking style in athletes, which allows them not only to succeed in sport but also to cope effectively with stressful situations in educational and professional contexts.

Emotional component – the ability to regulate emotions, reduce the destructive impact of anxiety, and maintain an optimal level of arousal. Emotional regulation is the foundation of psychological resilience, as it determines the ability to control anxiety, arousal, and affective responses. Athletes with a high level of emotional resilience are able to maintain the optimal zone of functioning (Yerkes-Dodson law), which helps them avoid both hyperactivation (panic, excessive nervousness) and hypoactivation (apathy, indifference). Tools for developing this component include mindfulness techniques, breathing exercises, and visualization, which contribute to balancing arousal and control, reduce the risk of emotional burnout, and sustain stability in critical moments of competition.

Behavioral component – maintaining activity, persistence, and discipline under difficult circumstances. The behavioral dimension of psychological resilience

is manifested in the athlete’s concrete actions under pressure: the ability to remain persistent, disciplined, and self-controlled in stressful situations. This means that even in the case of failure, the athlete continues to adhere to training and tactical plans, maintains activity, and demonstrates consistent task execution without succumbing to destructive impulses. The development of this component is closely linked to the formation of “psychological habits” – concentration skills, preparation routines, and self-regulation rituals that help stabilize behavior under conditions of uncertainty.

Thus, the cognitive, emotional, and behavioral components form a unified integrative system that enables the athlete to mobilize resources, maintain stability, and achieve high performance. Their development should become a strategic focus of psychological support in sport, as they underpin the ability for self-regulation, stress resistance, and adaptation under challenging conditions.

Of particular importance are psychophysiological markers that confirm the link between resilience and the regulation of the cardiovascular and neuromuscular systems. Heart rate variability (HRV) is considered a reliable indicator of athletes’ adaptation to stressors. The use of HRV biofeedback has proven effective in enhancing emotional regulation and reducing fatigue, which directly influences athletic outcomes.

Intervention programs aimed at developing psychological resilience combine various methods: psychological skills training (goal-setting, imagery, self-talk); mindfulness and acceptance practices (the Mindfulness-Acceptance-Commitment approach); breathing techniques and HRV biofeedback; and pressure-training scenarios designed to cultivate the habit of performing effectively under high responsibility.

In summary, the findings indicate that the development of psychological resilience not only increases athletic performance but also serves a preventive function – reducing the risk of emotional burnout, supporting long-term motivation, and promoting athletes’ overall health.

Conclusions. Psychological resilience is a fundamental characteristic of the athlete’s personality that determines their ability to act effectively under the high demands and stress pressure of competitive activity. It integrates cognitive, emotional, and behavioral components that ensure the mobilization of internal resources, control of anxiety, regulation of emotional states, and maintenance of concentration during critical moments of competition.

The findings confirm that a high level of psychological resilience contributes not only to the stability of athletic performance but also to the long-term preservation of motivation, the prevention of emotional burnout, and the maintenance of athletes’ mental health. Psychophysiological markers, particularly heart rate variability (HRV), hold special significance as they open

up perspectives for integrating modern biotechnologies and biofeedback programs into sports training practice.

The practical value of the study lies in substantiating comprehensive approaches to resilience development, which combine psychological skills training, mindfulness practices, breathing techniques, HRV biofeedback, and pressure-based training scenarios. Such multilevel interventions contribute not only to the optimization of athletic performance but also to the formation of essential competencies in athletes – adaptability, stress resistance, and self-regulation capacity.

Prospects for further research are linked to the need for: the standardization of methods for

measuring psychological resilience; the investigation of causal mechanisms underlying the interaction of cognitive, emotional, and physiological factors; the development of resilience programs for athletes of different ages and sports; and the integration of modern digital technologies (mobile applications, virtual simulations) into the system of psychological training.

Thus, psychological resilience emerges not only as a factor of sporting success but also as a strategic resource for the long-term development of the athlete, ensuring effective functioning both in sport and in the broader social context.

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